

**FGC** 

Forest Genetics Council  
of British Columbia

## **ANNUAL REPORT** **2008/2009**

# **BCFS Tree Seed Centre**



## Table of Contents

Acknowledgements .....	1
Message from the Chief Forester .....	2
Message from Forest Genetics Council Co-Chairs .....	3
<b>1.0 Forest Genetic Resource Management in British Columbia .....</b>	<b>4</b>
1.1 About the Forest Genetics Council of British Columbia .....	4
<b>2.0 Budget Summary and Provincial Progress Indicators .....</b>	<b>6</b>
2.1 Budgets and Expenditures .....	6
2.2 Provincial Performance Indicators .....	6
<b>3.0 Subprogram Summaries .....</b>	<b>8</b>
3.1 Genetic Conservation Subprogram .....	8
3.2 Tree Breeding Subprogram .....	9
3.3 Operational Tree Improvement (OTIP) Subprogram .....	10
3.4 Expansion of Orchard Seed Supply Subprogram (SelectSeed Company Ltd.) .....	12
3.5 Extension and Communication Subprogram .....	13
3.6 Genetic Resource Decision Support Subprogram .....	14
3.7 Seed Orchard Pest Management Subprogram .....	15
3.8 Administration .....	16
<b>4.0 2008 Orchard Seed Crops .....</b>	<b>17</b>

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### Cover graphic - Provincial Tree Seed Centre 50<sup>th</sup> anniversary

The Provincial Tree Seed Centre (TSC), operated through the Tree Improvement Branch of the Ministry of Forests and Range, celebrated its 50th anniversary in 2008. Since a modest beginning at the BCFS nursery site in Duncan in 1958, the TSC has been a leader in the development of methods for all aspects of cone and seed extraction and processing, storage, testing, preparation and extension. Seed inventories for all Crown land reforestation in BC are maintained at the TSC, and most seedlots sown by nurseries are processed, stratified and shipped by the Seed Centre. This world-class facility is a key part of the successful seedling production and tree planting programs carried out by both the private and public sector in British Columbia.





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## Acknowledgements

*This Annual Report presents 2008/09 financial information and performance indicators for activities planned and delivered under the Business Plan of the Forest Genetics Council of BC, and for the Forest Investment Account Forest Genetics Conservation and Management Program (FGCM). Program details are provided in the FGC Business Plan for 2008/09, and the Tree Improvement Program Projects Report for 2008/09.*

*As noted on the front graphic, the provincial Tree Seed Centre celebrated its 50<sup>th</sup> anniversary in 2008. Other parts of the broad provincial program have also been in operation for many years, including early tree breeding work with coastal Douglas-fir dating back to the 1950's, provenance testing in the 1960's and 70's, and seed orchards and breeding programs expanding in the 1970's and '80's. The cooperative world-class forest genetics program of today was made possible by the work and foresight of those before us. The collaboration and effort continues today, with strong contributions from the provincial Forest Service, forest companies, universities, and others. The dedication and hard work of many people has resulted in strong provincial tree improvement and genetics programs and will lead us through the challenges of the coming years.*

*I would like to thank all involved for their support and work during the year, in particular FGC Co-Chairs Brian Barber and Kerry McGourlick, Coast and Interior TAC chairs Annette Van Niejenhuus and Tim Lee, Genetic Conservation TAC chair, Dave Kolotelo, Pest Management TAC chair Robb Bennett, Extension TAC chair Chris Hawkins, and Lee Charleson, chair of both the Seed Transfer TAC and the Genetic Resource Information Management Steering Committee.*

*In addition, Provincial Chief Forester, Jim Snetsinger, and Deputy Chief Forester, Melanie Boyce are thanked for their support and guidance throughout the year.*

Photo credits:  
S Aitken, J. Woods.



**JACK WOODS,**  
Program Manager,  
Forest Genetics  
Council of BC



**JIM SNETSINGER,**  
Chief Forester,  
B.C. Ministry of  
Forests and Range

## Message from the Chief Forester

*I'm pleased to participate in this, the eighth consecutive annual report of the Forest Genetics Council of BC. Through its business planning and reporting process, Council has facilitated the delivery of a cooperative, well organized, and efficient genetic resource management program in BC for nearly a decade. Completion of a new Strategic Plan for the period 2009 to 2014 will further support this cooperative effort over the next 5 years.*

*I would like to congratulate staff from the Provincial Tree Seed Centre for their celebration of the Centre's 50th anniversary. The Tree Seed Centre has provided an exemplary service to reforestation and to genetic resource management in BC and I fully anticipate that this quality of service will continue for another 50 years.*

*Tree improvement plays an important role in meeting the objectives of government and the Ministry of Forests and Range. Planting seedlings grown from fast-growing and pest-resistant genotypes has a very positive impact on timber flow in many of BC's management units, which is especially important in the aftermath of the mountain pine beetle (MPB) outbreak and fires in the interior. Use of select seed also serves to sequester more carbon in our forests, offsetting greenhouse gas production.*

*I note that the long-term forecasts were largely met in the FGC's previous Strategic Plan for the period 2004 to 2008 (see figures 1 and 2). Select seed use has dropped somewhat below forecasted. However, I anticipate that this will return to projected levels as lodgepole pine orchards begin to increase seed production.*

*During the period of this report, the BC forest sector faced unprecedented pressures due to the global economy and impact of the MPB. These factors have contributed to a decline in harvest and reforestation levels, and consequently, a reduction in seed and seedling demands. Although sowing requests may begin to recover, provincial seed orchards (public and privately owned), which rely upon seed sales, will likely be impacted financially in the short-term. This and the expectation of continued provincial budget reductions will create challenges for the FGC and its technical committees. Nonetheless, I'm confident that the FGC will provide the leadership needed to work through this difficult period so we can achieve our renewed objectives for enhancing the value, resilience, and conservation of BC's forest genetic resources.*

*I would like to thank Council members and the members of all FGC technical committees for their efforts and cooperation during the past year. Melanie Boyce, A/Deputy Chief Forester, and I look forward to working with Council again in 2009/10.*

## Message from Forest Genetics Council Co-Chairs

*The past year has presented challenges to the forest sector, and to the various subprograms of the overall FGC-led provincial program of tree improvement and forest genetics. Not the least of these is the negative economic climate in which the forest industry currently operates. These difficulties led to a comprehensive discussion on private-sector participation in seed orchards, with input from a broad range of stakeholders. This process will culminate in a better understanding of respective roles and in greater cooperation among all players, and is a good example of how the FGC is well positioned to bring people together to find positive solutions that respect the needs of all involved. It is anticipated that this discussion will result in a set of principles for public and private seed orchards in BC that will help the seed orchard industry meet seed production and genetic gain objectives set out in the FGC's Strategic Plan for 2009 to 2014.*

*Council also participated in other policy developments during the year, including a submission to the Roundtable on Forestry and a recommendation to the Provincial Chief Forester regarding the standard allowing seed-transfer flexibility on up to 5% of planting. On these issues, as well, the opportunity provided by a collaborative approach is helpful in advancing the collective interest and in streamlining policy.*

*During the period of this report Council implemented a Seed Transfer Technical Advisory Committee (STTAC) chaired by Lee Charleson. The STTAC subsequently developed provincial priorities and implemented a call for proposals for genecology research. The objective of this subprogram is to develop information needed for climate-based seed transfer standards; an objective set out in Council's strategic plan.*

*2008 was, on average, an off-year for seed production in provincial orchards. It is noteworthy, however, that even during an off year, the large number of mature orchards across 9 species still resulted in enough seed to grow over 150 million seedlings. In addition, young lodgepole pine orchards continue to increase production; increases that will be necessary to meet Council's objectives for select seed use.*

*We would like to thank all members of Council and technical committees for their contributions during the year, including the following people who recently retired from Council; Dr. Michael Carlson, Frank Gundersen, Dr. Chris Hawkins, Dr. Gary Hogan, Mike Madill, Dr. Alvin Yanchuk, and, in particular, John Elmslie for his contributions to Council as Industry Co-Chair. Finally, we would like to recognize the important financial support provided by the Forest Investment Account Forest Genetic Conservation and Management Program, and the ongoing support from Chief Forester, Jim Snetsinger and Deputy Chief Forester, Melanie Boyce.*

**BRIAN BARBER and  
KERRY MCGOURLICK,**  
Co-Chairs,  
Forest Genetics  
Council of BC

## 1.0 Forest Genetic Resource Management in British Columbia

This Annual Report describes progress on work outlined in the Forest Genetics Council of BC (FGC) Business Plan for 2008/09. The Business Plan and this Annual Report focus on Forest Investment Account (FIA) funding, although performance indicators used at the project and provincial levels represent the combined effort and investment of all cooperators.

Forest genetic resource management (GRM) in British Columbia includes conservation of the genetic resource of indigenous forest tree species, increasing value through tree breeding and seed production, and enhancing forest resilience through scientifically-based seed transfer standards and the maintenance of genetic diversity.

### 1.1 About the Forest Genetics Council of British Columbia

The FGC is a multi-stakeholder group representing government agencies (Ministry of Forests and Range, Canadian Forest Service), the forest industry, universities, and non-industrial private companies. The mandate of the FGC is to champion forest GRM, to oversee strategic and business planning for a cooperative provincial GRM program, and to advise the provincial Chief Forester on GRM policies.

The FGC acts as a forum through which stakeholders can cooperate in program development, seek efficiencies in implementation, and lead business planning for provincial investments through the FIA Forest Genetics Conservation and Management Program (FGCM). During the term of this report, the provincial FIA-FGCM was a major funding source for GRM in British Columbia. Industry, MFR, and university cooperators also contributed substantial resources.

“

*Forest genetic resource management includes conservation, value gain, and forest resilience.*

”

“

*The Forest Genetics Council leads business planning for the FIA Forest Genetics Conservation and Management Program.*

”



Council set the following vision statement and objectives in its five-year Strategic Plan (2009-2014), and annually develops a Business Plan outlining activities to meet the objectives.<sup>1</sup>

### **Vision**

*BC's forest genetic resources are diverse, resilient, and managed to provide multiple values for the benefit of present and future generations.*

### **Objectives**

- *Adequately conserve the genetic diversity of key populations of all forest tree species native to BC by 2015, through a combination of in situ, ex situ, and inter situ conservation*
- *By 2020, high-quality genecology research information will guide operationally efficient climate-based seed transfer policy and practice for all trees planted in BC*
- *Increase the average volume gain of select seed used for Crown land reforestation to 20% by the year 2020*
- *Increase select seed use to 75% of the provincial total sown by 2014*
- *Coordinate stakeholder activities and secure the resources needed to meet Business Plan priorities*
- *Monitor and report progress in genetic resource management activities*

### **Dr. Dale Draper**

Dale began his career as a scientist with the Ministry of Forests and Range, Research Branch in 1980, and later served as manager of the forest genetics section. After leading a review and reorganization of provincial tree improvement activities, he was appointed as Director of the Tree Improvement Branch in 1998, and co-chaired the Forest Genetics Council from 1998 to 2007. In 2007 Dale moved on to direct the Climate Change unit within the MFR, prior to retirement in 2008. He played a key role in developing the current cooperative structure of genetic resource management programs in BC, and his foresight and strategic-thinking abilities are missed.



<sup>1</sup> For more information on the Forest Genetics Council, see <http://www.fgcouncil.ca>.

## 2.0 Budget Summary and Provincial Progress Indicators

### 2.1 Budgets and Expenditures

Forest Investment Account Forest Genetics Conservation and Management program allocations and expenditures for the 2008/09 fiscal year are shown in Table 1. The table does not include in-kind, staff, and other substantial inputs by industry, MFR, and university cooperators who contribute to the success of GRM activities in B.C.

**Table 1**  
Summary of Forest Investment Account Forest Genetic Conservation and Management program budgets and expenditures for the period April 1, 2008 through March 31, 2009 (\$ x 1000).

Subprogram	Budget (\$)	Expenditures (\$)
Genetic Conservation	411	341
Tree Breeding	2,421	2,471
Operational Tree Improvement Program (OTIP)	760	755
Extension and Communication	117	117
Genetic Resource Decision Support	115	50
Seed Orchard Pest Management	420	395
Administration	55	55
Incremental projects	544	544
SelectSeed Ltd. orchards and FGC program management	770	770*
<b>Forest Investment Account Tree Improvement Program Contribution</b>	<b>5,613</b>	<b>5,498</b>

\* SelectSeed FIA allocation shown. Total SelectSeed expenditure \$898,339; difference supported through seed sale revenue and investment income.

### 2.2 Provincial Performance Indicators

Two of the principal objectives in the FGC Strategic Plan are to increase select seed use to 75% of total provincial sowing by 2013 and to increase the average volume gain (genetic worth for stem-volume growth, or GWg) of select seed to 20% by 2020. Actual and forecast values for select seed use and GWg for the period 2000–2020 are shown in Figures 1 and 2.

Sowing spiked to a high of about 280 million seedlings in the 2006 sowing year (ending June 30, 2006) and 270 million in 2007<sup>2</sup> due to harvest level increases driven by mountain pine beetle (MPB). In 2009, adverse economic conditions in the forest industry caused a reduction in harvest levels and a

<sup>2</sup> Includes private land sowing.



subsequent reduction in sowing to about 190 million; well below the longer-term average of about 220 million. Select seed use in the 2009 is somewhat below forecast levels due to larger declines in sowing for seed planning units with adequate inventories of select seed, relative to seed planning units (mostly lodgepole pine) with insufficient select seed available. Lodgepole pine orchards continue to increase supply, however, and it is expected that select seed use will continue to increase as a percentage of all sowing. Further reductions in provincial sowing are, however, anticipated in the 2010 sowing year and are likely to remain below average for several more years.

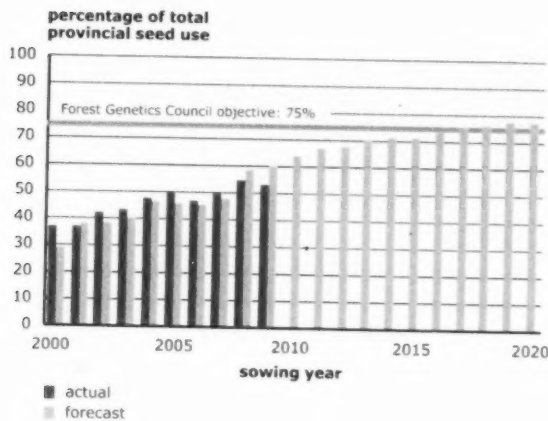


Figure 1  
Actual and Species-Plan  
forecasts of select-seed  
production as a  
percentage of provincial  
seed use.

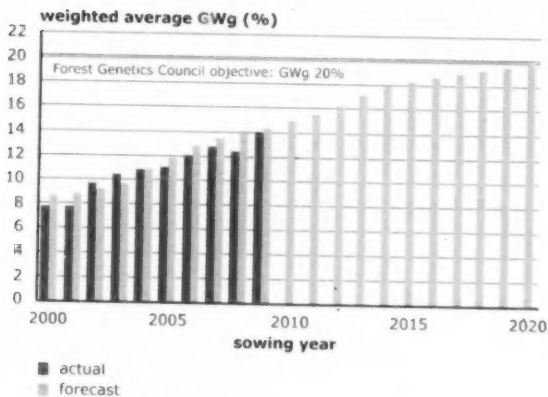


Figure 2  
Actual and Species-Plan  
forecasts of the average  
genetic worth for stem-  
volume growth  
(GWg) of select seed  
sown in B.C.

The average genetic worth (GWg) of orchard seed used in the 2009 sowing year (Figure 2) increased primarily due to larger amounts of higher-genetic worth interior Douglas-fir and lodgepole pine, and an overall upward trend in orchard gain levels. These gain increases, to a large degree, reflect the success of the Operational Tree Improvement Subprogram in supporting seed orchard quality improvements and the transfer of genetic gain from breeding programs to operational silviculture.

“

The Genetic Conservation Subprogram supports Council's strategic objective to conserve key populations of all tree species native to BC by 2015.

”

## 3.0 Subprogram Summaries

### 3.1 Genetic Conservation Subprogram

The Genetic Conservation Subprogram is designed to support Council's strategic objective to conserve important populations of all tree species native to BC by 2015. This subprogram is organized by the Genetic Conservation Technical Advisory Committee (GCTAC) and involves several key tasks, including the identification of key populations through an understanding of natural patterns of genetic diversity, cataloguing existing natural diversity, and the coordinated *ex situ* and *inter situ* conservation of populations deemed to be at risk. Program delivery is through the Centre for Forest Conservation Genetics (CFCG) in the Faculty of Forestry at UBC<sup>3</sup>, and the Ministry of Forests and Range.

Conservation subprogram accomplishments during 2008/09 are summarized in Table 2. Total subprogram spending was \$341,000 on a planned budget of \$411,000. Delayed hiring of a MFR geneticist to lead genetic conservation projects resulted in less salary expenditure than anticipated.

Table 2  
Summary of Genetic Conservation projects, planned products and products achieved for the period April 1, 2008 through March 31, 2009.

Project	Planned products	Products achieved
Cataloguing <i>in situ</i> protection	Conservation status report on 49 species	Report completed
Testing climate-change predictions for whitebark and lodgepole pine	2 progress reports	2 reports completed
Genecology of Garry oak	1 progress report	1 report presented to the GCTAC
Population genetics and genecology of Pacific dogwood	1 progress report	1 report presented to the GCTAC
<i>Ex situ</i> conservation seed collections	Collections dependent upon cone crops; 1 progress report	Collections made for 13 species; 1 progress report to the GCTAC
Seedlot response to climate variables (growth chamber experiments)	1 progress report on lodgepole pine and interior spruce	Progress reports presented to the GCTAC
Extension and communication	100 clients served / website maintained	Website accessed frequently; communication with the popular press and others
<i>Ex situ</i> seed bank testing	1 report	Testing partially completed; 1 report presented to the GCTAC

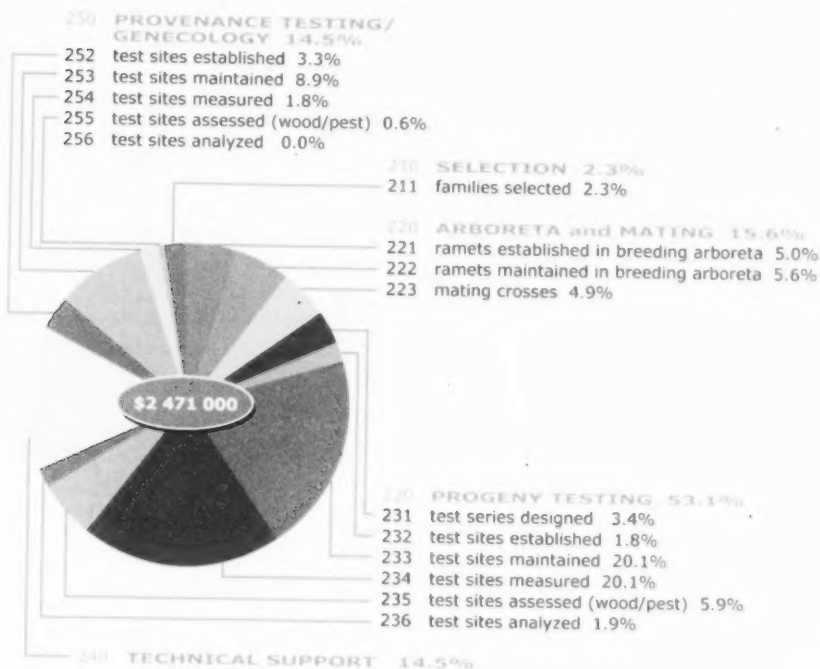
<sup>3</sup> Web site: <http://www.genetics.forestry.ubc.ca/cfcg>.

### 3.2 Tree Breeding Subprogram

The Tree Breeding Subprogram adds value by testing and selecting trees that have heritable traits of commercial value, including fast growth, pest resistance, and wood quality. Selected trees are used in seed orchards where they can inter-mate and produce high genetic worth (GW)<sup>4</sup> seed for planting programs. During the 2008/09 fiscal year, this subprogram also included genecology<sup>5</sup> research to develop information for seed transfer limits.

The MFR Research Branch manages and carries out Tree Breeding Subprogram activities, including selecting parents in wild stands, propagating, testing offspring, controlled breeding, establishing/maintaining/measuring trials, and associated research. The FGC Interior and Coastal TACs, and their associated Species Committees, assist MFR tree breeders with planning, priorities, and budgets for the subprogram.

Figure 3 shows the allocation of effort to Tree Breeding Subprogram activities in 2008/09. Figure 4 compares the work completed under each activity to work planned for the fiscal year.



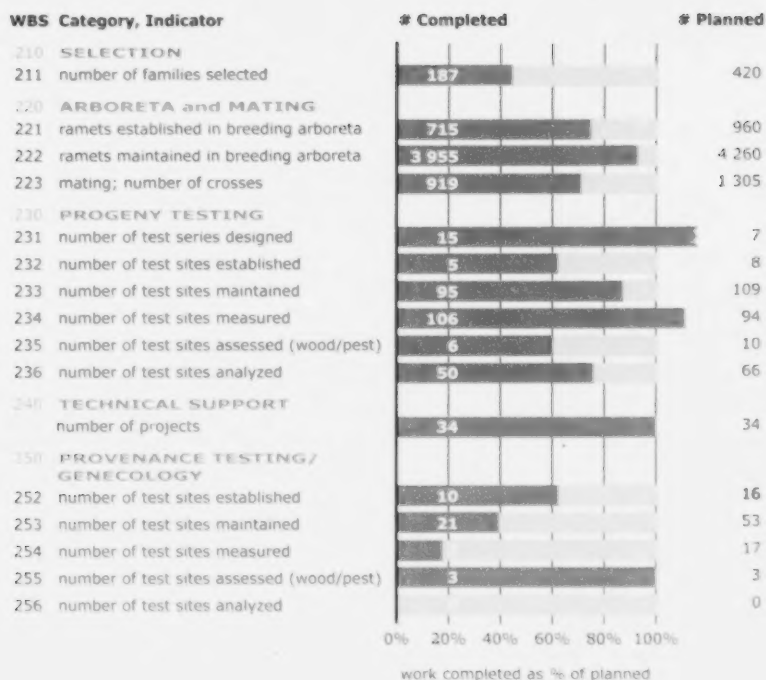
“Tree breeding programs improve the genetic worth of vegetative materials transferred to seed orchards.”

Figure 3  
Tree Breeding Subprogram  
budget allocations for  
2008/09.

<sup>4</sup> Genetic worth is an estimate of the expected percentage difference between a selected seed or vegetative lot relative to a wild stand seedlot for a specific trait (e.g., growth, wood density, pest resistance) at a reference stand age of 60 years (80 years for interior spruce).

<sup>5</sup> Genecology is the study of relationships between genetic diversity and environments.

Figure 4  
Tree Breeding Subprogram  
performance indicators for  
2008/09.



### 3.3 Operational Tree Improvement (OTIP) Subprogram

“OTIP focuses on increasing the quality and quantity of seed produced from existing seed orchards.”

The OTIP Subprogram focuses on increasing the quality and quantity of seed produced from provincial seed orchards. It also provides technical support to improve orchard production and management.

OTIP projects are developed through a call-for-proposals that is based on Species Plan priorities. FGC Review Committees rank all proposals against FGC objectives and SPU priorities, based on technical merit, impact, value, and cost. The MFR Tree Improvement Branch administers OTIP on behalf of the Forest Investment Account and the FGC.

Figure 5 shows the allocation of funding to OTIP Subprogram activities in 2008/09. Figure 6 compares the work completed under each activity to work planned for the fiscal year.

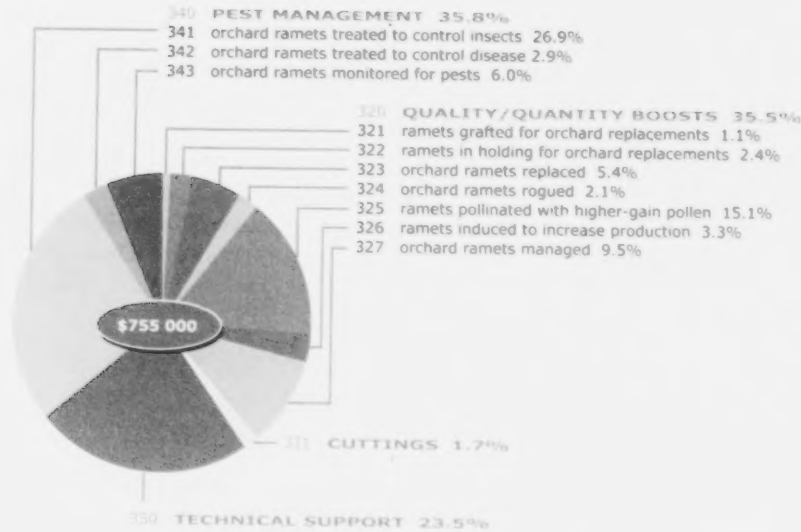


Figure 5  
OTIP Subprogram budget  
allocations for 2008/09.

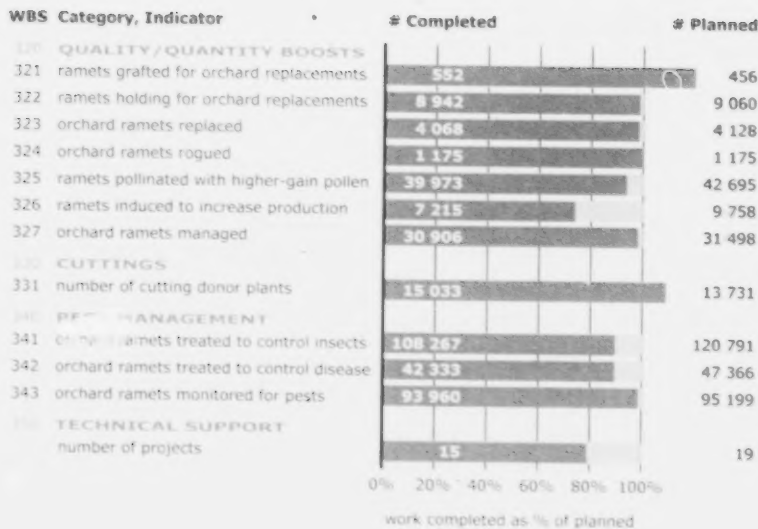


Figure 6  
OTIP Subprogram  
progress, 2008/09.

### Activities

A total of 84 projects received funding support based on review committee recommendations. Of these, 83 proceeded and one was dropped due to no manageable cone crop. Although 2008 was a moderate cone crop year in most orchards, the majority of projects proceeded on schedule and met project objectives<sup>n</sup>. As in previous years, the bulk of the projects were directed at increasing seed quantity and genetic quality.

<sup>n</sup> For specific project details see the *Tree Improvement Program Project Report for 2008/09*

### 3.4 Expansion of Orchard Seed Supply Subprogram (SelectSeed Company Ltd.)

SelectSeed Company Ltd. is wholly owned by the FGC through the B.C. Forest Genetics Society. SelectSeed's mandate from the FGC is to develop and manage orchard expansions needed to meet FGC objectives, and to produce seed of high genetic quality for use in provincial reforestation programs. A total of 14 seed orchards and about 35,000 ramets are managed under SelectSeed contracts. SelectSeed also provides program management services to the FGC.

SelectSeed spending for 2008/09 is summarized in Figure 7 and was consistent with Business Plan expectations. Figure 8 shows planned and completed work, seed crops, and seed sales for the fiscal year.

Figure 7  
SelectSeed Co. budget  
allocations for 2008/09.

\*Total expenditure; FIA  
contribution \$770 000

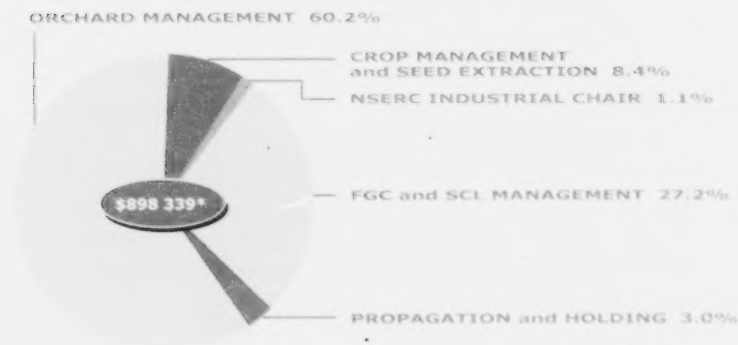
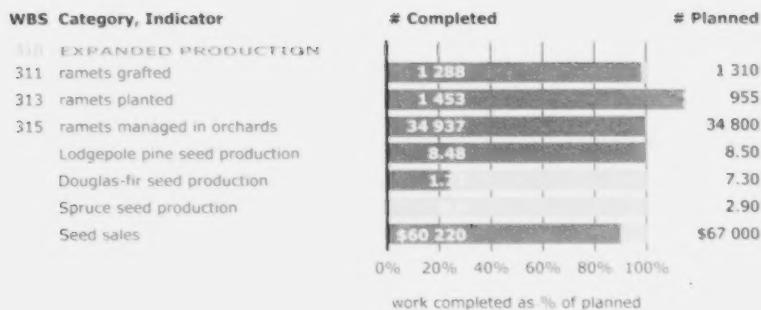


Figure 8  
SelectSeed Co.  
performance indicators  
for 2008/09.



#### Seed Production

Seed yields were on target for lodgepole pine orchards, but below expectations for Douglas-fir and interior spruce. Seed sales were somewhat below forecast levels due to low seed production. The difference between expected and actual crops and sales was primarily due to a late spring frost that killed emerging Douglas-fir cones in the north Okanagan. Lodgepole pine seed set was low for most orchards in 2008, including most SelectSeed orchards. All lodgepole pine orchard managers continue to collaborate in their efforts to increase seed set.



### SelectSeed Ltd. Management

All management activities planned for 2008/09 were completed, including:

- Management of orchard and propagation contracts, orchard planning and support, scion collection, stock allocation, workplan development, and records maintenance;
- preparation of a Business Plan and Annual report;
- maintenance of books of account and corporate records; completion of audits and Board of Director procedures; and
- reports on operations and finance to the FGC and FIA administrators.

“  
Lodgepole pine seed  
crops from the young  
SelectSeed orchards met  
expectations in 2008.  
”

### FGC Program Management

FGC program management activities included developing the FGC Annual Report for 2007/08; organizing committee work for the development of the 2009/10 FGC Business Plan; policy, committee, issue management, and reporting for the FGC; updating species plans; and coordinating FGC activities.

## 3.5 Extension and Communication Subprogram

The Extension and Communication Subprogram supports FGC goals and objectives through extension, communication, and education activities. These activities are developed and guided by the FGC Extension Technical Advisory Committee (ETAC), which includes representatives from government, industry, seed dealers, academia, and consultants.

Figure 9 shows funding allocations to the Extension and Communication Subprogram activities in 2008/09.

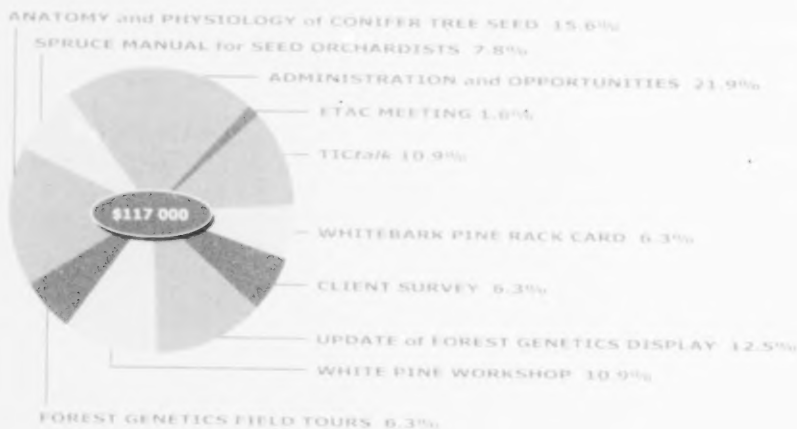


Figure 9  
Extension and  
Communication  
Subprogram budget  
allocations for  
2008/09.

“

*The Extension and Communication Subprogram activities serve public, technical, and decision-making audiences.*

”

#### FGC Program Extension

In addition to ongoing extension to operational foresters and the public, the following extension activities were completed:

- A western white pine workshop was held in Vernon with a field component in the Okanagan area;
- Coastal tree improvement history meetings;
- Coastal extension meeting held at UBC;
- Publications on Sitka spruce and whitebark pine, as well as an edition of TiCTalk;
- FGC and Tree Improvement Branch website maintenance.

### 3.6 Genetic Resource Decision Support Subprogram

The Genetic Resource Decision Support Subprogram supports FGC goals and objectives through the development of registries and other tools to aid a broad range of GRM activities. GRM decision support systems provide clients with the ability to register, catalogue, and order seed and seedlings for reforestation, provide improved decision support to forest managers, incorporate genetic gain assumptions into timber supply analyses, and develop seed deployment strategies. In addition, data systems support the tracking of seed-use status and trends and the monitoring of performance.

The Genetic Resource Decision Support Steering Committee guides the development of decision support investments and activities. A total of \$115,000 was allocated for 2008/09, but a provincial government contract restrictions imposed late in the fiscal year limited allocations made in this subprogram to \$50,000. As a result, not all planned projects were completed.

#### Accomplishments:

- Spatial updates of the Seed Planning Units (SPUs) digital data and SeedMap to accommodate interim climate-based seed transfer standards.
- Data on provincial seed use was compiled and analyzed for the Genetic Diversity and Silviculture (select seed use) indicators for the provincial State of the Forest 2010 report.
- Online help and training for SPAR users.

### 3.7 Seed Orchard Pest Management Subprogram

The Seed Orchard Pest Management Subprogram supports research, extension, and pest management operations to increase orchard yields of high quality seed. All investments and activities are guided by the Pest Management Technical Advisory Committee (PMTAC), and directed primarily at research and extension. Operational cone and seed pest management is undertaken by seed orchard personnel and supported by orchard owners or through the OTIP subprogram.

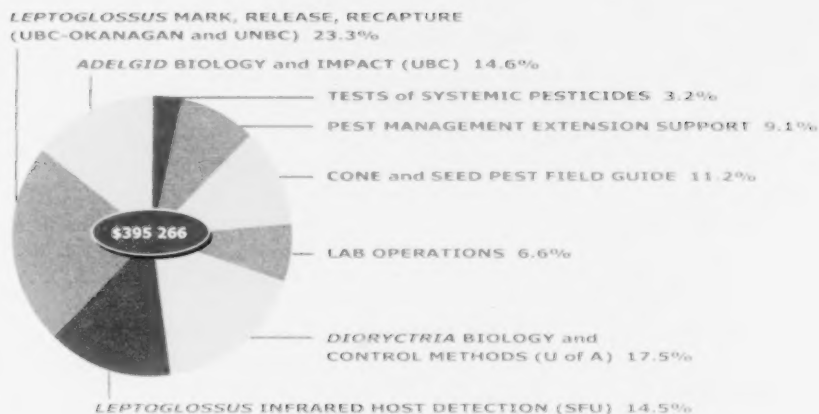
Research plans and budgets are established through prioritization by the PMTAC, followed by proposal development by project leaders, and project approval by the PMTAC. Final budget approval rests with the FGC. Projects and progress in the 2008/09 fiscal year are summarized in Table 3, below.

“  
The seed and cone pest  
management  
subprogram guides pest  
research and extension  
investments in support  
of orchard seed  
production  
”

Project	Species impacted	Progress
<i>Dioryctria</i> (Douglas-fir cone moth) biology, ecology and life cycle study to better understand control methods	Sx, Fdi, Fdc, Lw, Pw	Field work in progress; final year of field work planned for 2009/10.
<i>Leptoglossus occidentalis</i> (western conifer seedbug); visible and infrared light host detection	All except Cwr & Yc	Field work in progress; further field work planned for 2009/10.
<i>Leptoglossus</i> mark, release, recapture to understand population movement	All except Cwr & Yc	Field work in progress; final year of field work planned for 2009/10.
<i>Adelgid</i> biology and impact	Sx, Fdi, Fdc, Lw, Pw	Project completed; publications in preparation.
Tests of systemic insecticides for cone and seed insect control	All	Injection trials completed.
Development of a cone and seed pest field guide	All	Initial field-guide drafts prepared for 13 insects.
Seed and cone pest management extension	All interior	Interior pest status reports, workshops, and on-going extension provided.

Table 3  
Summary of Seed  
Orchard Pest  
Management projects,  
planned products  
and progress for  
2008/2009.

Figure 10  
Seed and Cone Pest  
Management subprogram  
budget allocations for  
2008/09.



### 3.8 Administration

Administration of Forest Investment Account Forest Genetic Conservation and Management Program funding is carried out by the MFR Tree Improvement Branch, and includes financial, monitoring, and reporting services. Direct administration of the Tree Breeding, OTIP, Extension and Communication, Cone and Seed Pest Management, and Genetic Resource Information Management Subprograms is provided by the MFR. Administration of grants is carried out by the recipient, including a component the Genetic Conservation (UBC) and Orchard Expansion (SelectSeed Co. Ltd.).



#### John Elmslie

John retired from Winton Global as Chief Operating Officer in 2008 after a career that spanned a broad range of responsibilities in forestry and management. John served as president and Chairman of the Board for Vernon Seed Orchard Company from 1996 to 2008, and as industry Co-Chair of the Forest Genetics Council from 2005 until 2008. A strong advocate for tree improvement in forest management and for cooperative, multi-stakeholder approaches, John provided strong industry leadership to Council.

## 4.0 2008 Orchard Seed Crops

Cone and seed production in 2008 was low for most species, although interior spruce crops were high and lodgepole pine crops continued to build over previous years. The total harvest of 1,322 kilograms of seed was sufficient to grow approximately 157 million seedlings (Table 4). A late frost in the north Okanagan killed emerging cones of interior Douglas-fir. Lodgepole pine first-year cone production was very high, promising a good crop in 2009.

Species	Seed produced (kg)	Seedling equivalents (million)
Interior spruce	948	121.5
Lodgepole pine	135	16.6
Western larch	92	9.7
Interior Douglas-fir	2	0.1
White pine	40	0.7
Western redcedar	10	2.0
Sitka spruce	6	0.8
Coastal Douglas-fir	72	2.6
Western hemlock	17	3.4
	1,322	157.4

Table 4  
Summary of 2008 seed  
crops from all provincial  
orchards.

### Dave Ponsford

Dave retired from the Research Branch of the Ministry of Forests and Range, in early 2009 after 35 years of service. For the past 8 years, Dave worked with the coastal Sitka spruce and white pine breeding programs. During this time he was instrumental in the establishment, maintenance and assessment of important trials that are contributing to genetic gains and the understanding of pest resistance in these species. Dave's well-organized and pragmatic approach is missed.



